



Trade Waste Incineration

7 Maple Avenue
P.O. Box 1000
Collinsville, IL 62234

April 24, 1996

Mr. Michael D. Grant
Field Operations Section
Division of Land Pollution Control
Illinois Environmental Protection Agency
2009 Mall St.
Collinsville, IL. 62234

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IEPA
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COLLINSVILLE, IL

RE: Trade Waste Incineration (TWI)
ILD098642424
Operating Condition V.b.D.8. and V.b.D.10. events at
Incinerator #4

Permits

Dear Mr. Grant,

Trade Waste Incineration (TWI) is reporting Operating Condition V.b.D.8. and V.b.D.10. events which occurred at Incinerator #4.

On March 29, 1996, Unit 4 logged a surge vent opening and visible emissions at 13:44:50 and visible emissions at 16:59:50 and 17:03:10. These events occurred as a result of incinerating sodium amide.

Attached is TWI's Incident Investigation Summary which details the sequence of events leading up to the incineration of this material on March 29, 1996. This Report also details the preventive actions that have been implemented as a result of this incident.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Charles T. Eifler
Charles T. Eifler
General Manager

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SCREENED



3/29/96 SODIUM AMIDE FIRE INCIDENT SUMMARY

SEQUENCE OF EVENTS:

On February 28, 1996, Profile AA9717 (Receiver # 7-6980) was received by TWI. This profile was appropriately flagged as a "Reactive D" on the Profile Summary Sheet. A Reactive D category requires the Process Engineer to be contacted for processing decisions. The Process Engineer reviewed the Condensed Chemical Dictionary (Att. A). Based on this information, the decision was made to process the material by removing the lids to prevent any pressure build up during incineration. The written processing plan (Att. C) did not specify how the lids should be opened. The appropriate PPE codes were assigned (NBR gloves, Saranex and full face respirators with supplied air).

This material was scheduled to be worked on Sunday (3/24/96) evening. However, the supervisor noted that this material was a water reactive material and due to heavy precipitation and high humidity, it was decided to not work this material on Sunday.

On Monday (3/25) evening, the Material Processing (MP) Crew began to work this material via cutting holes in the lids. The crew followed the instructions previously outlined Sunday night to make holes in the lids large enough to relieve pressure and place the vented containers into charge boxes. They initiated this activity at approximately 19:15.

The employees who were making the holes were wearing full face respirators on air and saranex. The Lead person did not note any liquids on or in the containers, and there was no precipitation noted that evening. The Leadperson indicated that they cut holes approximately 5-6 inches in diameter, and placed them in bags. The first bag was wrapped and tucked, and the second was tied. The bagged cans were placed into charge boxes. There was no absorbent or cobb placed into the charges. All 254 charges were completed by approximately 02:00. They shrink wrapped the charges and loaded them on trailer for Unit #4.

On Tuesday, March 26, 1996, the Unit #4 operators began charging the material at 11:52 on the Aux. conveyor system. The control room operator identified kiln pressure increases from the material after 31 charges had been incinerated. The operator contacted the Unit Supervisor. The Process Engineer was consulted, and he reviewed the Encyclopedia of Explosives and Related Items (Att. B). He noted that the material had the potential to generate gas at a fast rate. The material was then attempted on the Main conveyor system beginning at 15:52. (The Aux. Feed Conveyor has a water spray on the charge ram, and it was speculated that this could be contributing to the problem.) The operator experienced similar problems with the kiln pressure after two charges and charging of the material was discontinued.

The material remained in Building 6 on Wednesday. On Thursday the MP crew processed one skid by removing the entire lid from around 10 charges. These were test burned at #4 with no pressures noted.

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On Friday, 3/29/96 at approximately 10:00, the Lead person for MP II was instructed to begin cutting bigger holes in, or remove the tops from, the remaining charges. He was told that another crew had previously worked the material and that the holes placed in them were too small.

They placed the first pallet of sodium amide which contained 5-6 cans in the pad. They had worked the first 4 or 5 containers from this pallet. At approximately 10:40, Todd Hale and Terry Dover were processing 4 gallon metal cans of sodium amide in charge boxes.

Terry did note that there was a black liquid in the containers. Terry had dropped his screwdriver and bent down to retrieve it when the container ignited and emitted heavy, dense, black smoke. Flames appeared above the container, and material splattered out from the container.

Todd's saranex suit caught fire. He was taken to the nearest safety shower. He was then transported to a local hospital for treatment of burns to his arms and face. He was kept overnight for observation and released the following day.

Additional references were consulted, the material was inspected, and a response plan was developed. Due to the potential shock sensitive nature of the reacted material remaining in charges, the decision was made to burn the remaining intact charges at Unit #4.

The charges were brought to Unit #4. The Unit was lined out and taken "out of operation". The charges were fed via the Aux Feed Conveyor. All personnel handling these charges donned Nomex coveralls and aluminized suits. The Health & Safety Manager was present throughout the process. The 27th charge reacted in the incinerator, causing a positive pressure and a surge vent opening. Feed was stopped, and CWM Management was contacted. Other options were discussed; however, due to the unstable nature of this material, and safety considerations, it was decided that the safest course of action was to expeditiously feed the remaining charges, as they existed, to the incinerator.

At approximately 15:00, Dennis Warchol notified Mark Schlueter, Air Division of the IEPA of the situation, and the potential concerns with burning this material. He outlined the situation, and the need for expeditious response on our part. Dennis also communicated to him that the products of reaction were NaOH and ammonia. Mark concurred.

The remaining charges were fed to the incinerator. In addition to the surge vent opening noted above, positive pressures occurred on three occasions, and two resulted in visible emissions. IEPA was updated at approximately 16:15 that there were no subsequent surge vent openings.

ROOT CAUSES

1. The effects of the reaction of this material with moisture in the air were not fully known by technical personnel. Therefore, the hazards, (including the necessity to promptly incinerate after processing), were not adequately communicated to employees.
2. The processing instructions were not specific or detailed enough to instruct employees in the procedures intended.

Contributing Factors:

1. Material was not burned promptly after processing. Five days transpired after the pails were opened before actual incineration or additional processing took place. In addition, 5% of the containers were opened on Feb. 28th for a visual inspection. This gave the material time to draw moisture from the air and react.
2. A back up plan was not developed to address what actions should be taken should prompt incineration not occur.
3. The processing decision to vent and incinerate promptly was communicated via verbal instructions which led to misinterpretation in the field. The Process Plan (Att. C) did not specify the opening/storage/processing methods.

PREVENTIVE ACTIONS:

1. Processing Instructions must be in writing, for all "Reactive" category A, B, C or D materials. These Instructions will be expanded to include additional information such as detailed, specific instructions, all known and potential hazards, spill response procedures, etc.
2. These Processing Instructions must be reviewed and approved in writing by the following personnel:
 1. Processing Supervisor
 2. Health & Safety
 3. Processing Engineer
 4. Line Management of Processing Supervisor
3. Before the Process Instructions are deviated from, the Supervisor, Process Engineer, Reactives Engineer, or Process Planner must be consulted. For significant changes (such as processing into charges materials that were originally designated to be direct charged to the incinerator, an alternate diluent to be used, etc.), the Management of Change process must be conducted on the change(s), and an alternate, written plan must be developed and communicated to all field personnel.

PREVENTIVE ACTIONS: (Continued)

4. Assemble a team of TWI personnel to review the flow of hazard information to the personnel actually performing the processing, and recommend improvements, as appropriate. Include a method in the system to ensure that appropriate reference materials are consulted, and the hazard information (such as the MSDS) is conveyed from the Approvals Group, Customers, etc. At a minimum, safety briefings must be in writing, conducted for the processing personnel, and available in the work area during processing.

ADDITIONAL ACTIONS PLANNED:

1. Determine the original manufacturer for waste products, (whenever available) and maintain these on file to be used to obtain additional information during emergency situations.
2. Evaluate the need to maintain or obtain special response equipment (remote openers, bomb buckets, etc.) for neutralizing/disposing of reactive materials.
3. Develop a training/certification program for Material Processing personnel that includes documentation of what they have been trained on (operating procedures for their work area), and signed off by their supervisor that they are performing the job correctly after observation.
4. In conjunction with the additional information to the included in the Processing Instructions (Ref. #1 above), the following should be addressed:
 - Large loads. Certain materials should be processed intermittently to ensure prompt destruction and avoid extended storage between processing and incineration in the event of incinerator downtime.
 - In the safety briefing, the Leadperson should be given additional "what if" information (what if processing is not immediate, what if material varies and define significant variation).
5. Additional training should be conducted on Dangerous When Wet and Flammable Solids Materials, and the appropriate tools for the job.
6. Consider providing a Staff Level Manager responsible solely for the Material Processing functions to enhance communications and attention to the processing Departments.